Oracle Client-Server Database for Cross-Platform Delivery of Educational Media

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ABSTRACT

This paper presents an overview of how client-server computing is revolutionizing the educational computing environment at Thomas Jefferson University. The Office of Academic Computing has chosen TCP/IP as the network protocol to tie together clusters of Macintosh and IBM compatible computers for the educational use of its students. The focus is on a self-assessment program (Q&A Student Version 1.0) for Jefferson Medical College students, the first client-server application based on the Oracle relational database system to be made available over University's Ethernet network.

First there were mainframes, then mini computers, then micros. The trend is for applications written for large mainframe computers to be "down-sized" to smaller, more cost-effective machines. When combined with the proliferation of powerful desktop machines, this trend has created problems and opened up new opportunities.

First, data security -- who makes sure that the database is secure? Have backups been made? Second, user accessibility -- how accessible is the database to its end user, the student? Third, content maintenance -- how accessible is the database to the content providers, i.e., the faculty? Early on, the faculty had no direct contact with the mainframe and many did not have their own PC. Data entry was accomplished through "sneaker net" -- hand delivery of printed questions or word processing files on floppy disk. Clearly, we need a better method to help faculty edit and update content.

The answer is client-server computing. Client-server applications divide processing into two parts. The client or "front end" processes involve the interaction with the user -- putting a pretty face on the application, usually in the form of a graphic user interface (GUI). The server processes involve the actual database manipulation. These two processes reside on separate machines connected over a network. Only the actual part of each record requested by the client is sent over the network.

Oracle on an IBM RS/6000 was chosen as the database server platform. Oracle Card was chosen as front-end for these applications creating a true "client-server" computing environment supporting both Macintosh and IBM compatible clients. A key consideration in choosing Oracle and Oracle Card was that they are the only client-server solutions that allow an application to be written on one platform (Mac or IBM) and run on the other -- without change.

Oracle Card comes with Table Builder and Query Builder applications. Table Builder makes it very easy to create tables while sitting at the Mac or PC client station, without ever having to log in to the server machine (or read the voluminous Oracle manuals). Likewise, Query Builder allows one to build ad hoc queries with little or no knowledge of SQL (Structured Query Language), the glue that connects the client to the server.

The Jefferson self-assessment database was born on a mainframe, was "down-sized" to the IBM PC in 1985, and has now been "right-sized" to the Oracle client-server system. Several other applications are being considered for client-server, including an image archive and curriculum database. The student interface to the Oracle-based Q&A application is shown in Figure 1.

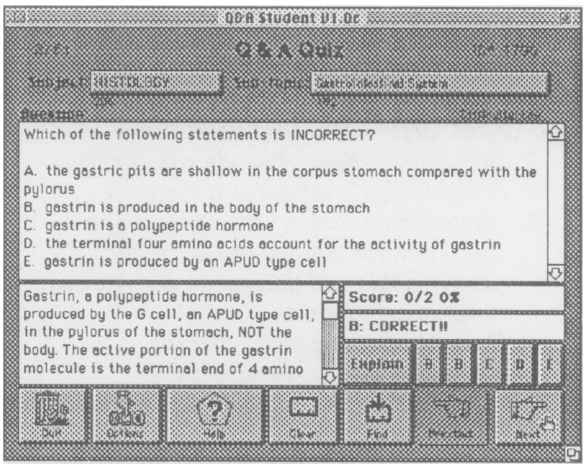

Figure 1. Sample Q&A Quiz Screen